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(54) METHOD FOR PRODUCING SUBSTRATE FOR MAKING MICROARRAY

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(52) U.S. Cl.

(58) Field of Classification Search

CPC ... C04B 40/04; C04B 50/18; G01N 33/54353 USPC 427/2.11, 2.12, 2.13, 409, 410; 435/7.1 See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

 2006/0234308
 A1*
 10/2006
 Schneider-Mergener et al.
 435/7.1

 2008/0292863
 A1*
 11/2008
 Yagihashi et al.
 428/304.4

FOREIGN PATENT DOCUMENTS

| JP | A-63-211300 | 9/1988 |
|----|--------------------|--------|
| JP | A-04-182491 | 6/1992 |
| JP | A-04-221630 | 8/1992 |
| JP | A-2007-518075 | 7/2007 |
| WO | WO 2005/066612 A2 | 7/2005 |
| | OTHER PUBLICATIONS | |

Japanese Office Action issued in Japanese Patent Application No. 2008-223026 dated Nov. 24, 2010 (with translation).

Sugimura et al., Microfabrication Based on Self-assembled Monolayer Resists and Wet-chemical Processes, Journal of the Surface Science Society of Japan, vol. 22, No. 6, pp. 364-369, 2001, with Abstract.

* cited by examiner

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(57) ABSTRACT

There is disclosed a method for producing a substrate for making a microarray, the method comprising: at least, a step of forming a monomolecular film having orientated oxysilanyl groups toward an outmost surface on the substrate; and a step of forming a monomolecular film having orientated amino groups toward an outmost surface on the substrate by applying a solution containing a diamine compound to the oxysilanyl groups. There can be provided a method for producing a substrate for making a microarray in which density and orientation of amino groups orientated toward an outmost surface are controllable, and in addition, there is no delamination of a monomolecular film formed on the substrate.

5 Claims, 1 Drawing Sheet

